APP. C

HEALTH AND SAFETY PLAN

AMVAC	
CLIENT	Amvac Chemical Corporation
SITE NAME:	Amvac Facility
PROJECT/TASK ID#:	0199.0004.001.001
SITE ADDRESS:	4100 East Washington Blvd., Los Angeles, California
DATE:	June 2006
PLAN EXPIRATION DATE:	June 2007

APPROVALS:

	Name	Signature	Date
PROJECT MANAGER	*Greg Dickinson, P.E., R.G.*		3/12/07
IH REVIEW			
FIELD SUPERVISOR	*Greg Dickinson, P.E., R.G*		
SITE HEALTH AND SAFETY OFFICER	*Greg Dickinson, P.E., R.G*		
HEALTH AND SAFETY MANAGER	*Craig Stolz, P.E.*		

REVIEWS:

	Name	Signature	Date
SUB-CONTRACTOR:			

LIMITATIONS

This Health and Safety Plan (HASP) has been prepared in accordance with California Code of Regulations (CCR), Title 8, Section 5192 to outline and discuss the health and safety procedures and safeguards to be utilized for the proposed subsurface assessment at the Amvac facility. This HASP may be revised, based on additional information, changes in site conditions, or changes in the scope of work Revisions must be submitted to and approved by the Pacific Edge Engineering, Inc. Health and Safety Manager (HSM).

The HASP will be implemented by the Site Health and Safety Officer (SHSO). Compliance with the HASP is required of all workers and visitors to the Site. The HASP is not a substitute for any contractor's required written safety and health programs such as Injury Illness Prevention Program and Respiratory Protection Program. The contractor must supply these programs and documentation of employee training, fit testing, and medical evaluation as required by these programs to Pacific Edge Engineering, Inc. prior to the start of site activities.

Due to the potentially hazardous nature of the Site and the activity occurring thereon, it is not possible to discover, evaluate, and provide protection for all possible hazards that may be encountered. Strict adherence to the health and safety guidelines set forth herein will reduce, but not eliminate, the potential for injury at the Site. The health and safety guidelines in the HASP were prepared specifically for this Site and should not be used on any other site without prior research by trained health and safety specialists.

Pacific Edge Engineering, Inc. claims no responsibility for the use of this HASP by unauthorized persons. This HASP is written for the specific site conditions, purpose, dates, and personnel specified and must be amended if these conditions change.

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1.0 FACILITY BACKGROUND/WORKPLAN

1.1 SITE BACKGROUND

The site subject to this Health and Safety Plan (HASP) is currently owned by Amvac Chemical Corporation and is located at 4100 East Washington Boulevard in Los Angeles, California. The site is approximately 3 acres and encompasses ten buildings with several operating areas including an aboveground tank farm and metam sodium and PCNB processing area. A site map is included in Attachment 1. The buildings contain offices, laboratories, warehouse storage, and/or manufacturing processes. In addition, the facility has parking areas and loading/unloading docks. There are also large pieces of heavy equipment (e.g., industrial boilers, water cooling units, etc.) located throughout the facility. Access to the site is generally good, however, access can be limited in production areas due to overhead piping and narrow walkways.

1.2 FACILITY BACKGROUND

Amvac currently manufactures and formulates various agrichemical products at the Site. Durham Chemical Company began formulating agrichemicals on a portion of the current Amvac property in approximately 1945. On December 31, 1972, Alco Chemical Company was merged into Durham. On January 2, 1973, the name of the corporation changed from Durham Chemical Company to Amvac Chemical Company. On August 10, 1976, Blackhawk Chemical Company was merged into Amvac. In 1993, Amvac Chemical Corporation-Nevada was merged into Amvac.

Historical sources indicate that the first development of the site began prior to 1938 with the establishment of a small building, possibly the present day Building 5. In approximately 1945, Durham began formulating insecticides in present day Buildings 1, 2, and 3. By 1950, the Site was comprised of a paint warehouse and mixing facility (Leanse Lacquer Supply), a construction company (California Construction Co.), machine shop, a woodworking shop, and Durham. In 1970, a major portion of the Site was acquired by Durham and was utilized for Durham's operation. Additional land to the east was acquired by Amvac in 1989, 1992, and 1993 and is used for office, storage and maintenance purposes.

On December 30, 1983, Amvac was issued a RCRA Hazardous Waste Facility permit for storage of hazardous waste. Amvac submitted permit renewal applications in 1988 and 1993. In 1996, Amvac withdrew its application for RCRA permit renewal and on December 9, 1996 received a variance for delayed closure of the permitted units from DTSC. On December 19, 1996, Amvac received authorization to treat hazardous waste under DTSC's Permit-By-Rule Program.

Hazardous waste is stored in either a 5,000 gallon bulk liquid container or 55-gallon drums and disposed offsite.

1.3 WORK PLAN

Environmental Mediation Inc.'s June 2006 Closure Plan for RCRA Permitted Units has been prepared to address closure of Resource, Conservation, and Recovery Act (RCRA) permitted units. The project site has been divided into Areas of Concern (AOC). RCRA permitted units subject to this HASP are located in AOC12. AOC 12 includes two RCRA permitted hazardous waste storage units, which are the drum and container storage pad and the 2,500 gallon AST. The pad and tank were permitted in 1983 and their locations were moved in 1988. The location of the bermed concrete pad was removed to make way for the northwestern corner of the metam sodium plant. The empty permitted tank is currently stored at an offsite warehouse.

Pacific Edge Engineering, Inc. will conduct onsite investigation activities in AOC 12 consisting of subsurface sampling with Geoprobe™ sample collection equipment. The anticipated duration of field activities is one to two days. A copy of the Closure Plan will be kept onsite during field activities, under separate cover.

The proposed scope of work generally includes collection of soil and soil vapor samples at depths of 5 to 15 feet and analysis of these samples for substances of concern that could reasonably be present in the area sampled. Personnel categories associated with the proposed scope of work include engineers, geologists, equipment operators, and health and safety.

The following field activities are addressed in this HASP:

Task 1: Utility clearance in all areas of subsurface concrete coring, hand augering, drilling, Geoprobe, Ramset or other subsurface activities prior to such activities.

Task 2: Concrete coring, hand augering to 5 feet to clear utilities, and collection of soil/soil vapor samples with a Geoprobe™ soil sampling system.

Task 3: Decontaminating sampling equipment by triple rinsing and wiping with acetone-misted towels and Geoprobe™/drilling equipment by steam cleaning.

1.3.1 On-Site Hazardous Waste Disposal

There has are been no known onsite disposal of hazardous waste. A summary of the maximum concentration of compounds detected at the site during previous site investigation work is provided in Section 3.2 – Chemical Hazard Summary of this report.

2.0 KEY PERSONNEL AND RESPONSIBILITIES

PROJECT MANAGER

The Project Manager will be Mr. Greg Dickinson. The Project Manager will assume control over site activities and is responsible for the health and safety of on-site personnel. Additionally, his responsibilities include:

1. Informing the SHSO of project development and scheduling.
2. Ensuring that all on-site personnel have received proper training and have been informed of the potential hazards of the work area, as well as the procedures and safeguards to be implemented on the job.
3. All necessary resources have been provided to on-site personnel to provide a safe and healthy work environment.
4. Modifying the HASP, when necessary.

FIELD SUPERVISOR

The Field Supervisor for the project will be Mr. Greg Dickinson or qualified alternate. The Field Supervisor is responsible for the field team's operations and safety. Additionally, his responsibilities include:

1. Execution of the work plan and schedule.
2. Enforcement of safety procedures.
3. Coordination with SHSO to determine the necessity of changes in the level of personal protection.
4. Enforcing site control.
5. Documenting field activities and sample collection.
6. Coordination with public officials.
7. Ensuring completion of the Site Visitor Log (Attachment 2)

SITE HEALTH AND SAFETY OFFICER (SSHO)

Mr. Greg Dickinson will be the designated SHSO for all Pacific Edge Engineering, Inc. activities. Mr. Dickinson (or qualified alternate) has the authority and knowledge necessary to implement the site HASP and verify compliance with applicable safety and health requirements. The SHSO must be present at all times during site operations. The SHSO has the authority to enforce the HASP and stop operations if personnel or community safety and health may be jeopardized. In addition, the SHSO will direct evacuation of the site if necessary.

The SHSO responsibilities include:

1. Coordinating and conducting Tailgate Safety Meetings and completing the documentation required by the HASP.
2. *Monitoring site personnel for signs of stress, such as heat stress or fatigue.*
3. Reporting unusual or potentially hazardous conditions to the Project Manager and the Field Supervisor.
4. Reporting injuries, exposures, or illnesses to the Project Manager and the Field Supervisor.
5. Knowledge of emergency procedures, evacuation routes, and hospital location.
6. On-going inspection of the Site to ensure the effectiveness of the HASP by air monitoring and evaluating the proper use of personal protective equipment (PPE) by on-site personnel.
7. Evaluation of scheduled work activities and on-site conditions to determine if changes to the HASP are necessary; if so, the SHSO must notify the Project Manager, Field Supervisor and HSM of the recommended changes.

Mr. Dan Herrick, or his qualified designee, is responsible for coordinating and conducting the Amvac Introductory Contractor Facility Safety Training for contractor personnel conducting onsite activities. All site contractor personnel must attend the Amvac Introductory Contractor Facility Safety Training and introductory Pacific Edge Engineering, Inc. site indoctrination training before initiating site activities.

TEAM MEMBERS

Subcontractors will be held responsible for safely completing the on-site tasks required to fulfill the Work Plan. Their responsibilities include:

1. Complying with the HASP.
2. Notifying the SHSO or Field Supervisor of unsafe conditions at the Site.
3. Providing Training Verification Documentation (Attachment 3)

2.1 KEY PERSONNEL AND ORGANIZATIONAL CHART

Key personnel are listed in section 2.0. The Project Manager will compile an organizational chart prior to site activities. A copy of the organizational chart will be posted at the project site.

3.0 JOB HAZARD ANALYSIS

3.1 HAZARD SUMMARY

Job hazard analyses (JHA) for Tasks 1 through 4 are included in Attachment 4.

3.1.1 Non-Chemical Hazard Summary

Table 3-1 presents a summary assessment of non-chemical hazards.

3.1.2 Chemical Hazard Summary

Chemicals of concern (COC) have been established for the site based on knowledge of current and past site operations. The pad was used for greater than 90-day storage of drums and containers of hazardous waste from 1983 to 1988. The 2,500 gallon hazardous waste storage tank was located near the southwestern corner of Building 7, west of the utility area. In 1988, this tank was removed from service and a 5,000 gallon tank was installed in the metam sodium plant for liquid hazardous waste storage.

Substances of concern previously handled by Amvac at the former hazardous waste pad include the following:

- spent solvents
- oils contaminated with organochlorine and organophosphorous pesticides
- spent filters used in pesticide production
- floor sweep and debris
- spent carbon
- contaminated personal protective equipment

Substances of concern previously handled by Amvac in the former hazardous waste tank include the following:

- spent scrubber solutions
- container rinse outs including organochlorine and organophosphorous pesticides

An assessment of chemical hazards for COCs present at all AOCs at the facility is provided on Table 3-2.

3.2 HAZARD ANALYSIS OF SITE ACTIVITIES

The Amvac facility extends west to east from 4070 to 4138 East Washington Boulevard and from 4124 to 4146 Pacific Way and is located in Los Angeles, California (Figure 2). The Facility is approximately

three acres in size and consists of 10 buildings with several production areas. The entire Facility is paved with asphalt and there are no areas of uncovered soil. The main part of the Facility is entirely fenced and access to the Facility is controlled at each entrance.

The facility has been divided into twelve Areas of Concern (AOC). Potential pathways for COC into the subsurface include surface spills from process and waste storage areas and leaks from USTs.

The chemical toxicity and physical properties of the COC were reviewed to assess exposure potential based on anticipated site activities. The evaluation of chemical toxicity was based on Cal-OSHA established permissible exposure limits (PELs), NIOSH RELs, ACGIH TLVs and other relevant data. The evaluation of physical properties was based on the potential form that the COC might be encountered in soil (i.e. gas, liquid, and solid).

Based on our review, the primary routes of entry into the body for the COC (refer to Table 3-2) were identified to be inhalation/ingestion and dermal contact.

Volatile COC (chemicals with vapor pressure greater than 0.001 mm Hg were considered volatile) that may result in an exposure through inhalation are summarized below with associated PEL (ppm or mg/m^3) and vapor pressure (mm HG) provided for each chemical:

- Acetone (750 ppm/1,780 mg/m^3; 231 mm Hg)

Onsite personnel may also be exposed to COC present in soil as a liquid or solid through inhalation and dermal contact. Training requirements, selection of PPE, and monitoring procedures for potential exposure to the COC are provided in this HASP in Sections 4.0, 5.0 and 7.0, respectively.

4.0 TRAINING REQUIREMENTS

4.1 HAZARDOUS WASTE OPERATIONS TRAINING

All personnel performing on-site activities are required to be trained in accordance with CCR, Title 8, Section 5192. As a minimum, all site personnel will have completed Hazardous Waste Operations (HAZWOPER) training; 24 hours of supervised on the job training; and an eight hour HAZWOPER refresher course, if initial HAZWOPER 40 hour training was acquired more than one year prior to the start date of site operations.

Personnel who are only on-site occasionally for a specific limited task (such as land surveying, geographic surveying, etc.) and who are unlikely to be exposed over permissible and published exposure limits, shall have received a minimum of 24 hours of instruction off the site and a minimum of one day actual field experience with a trained, experienced supervisor. All training must be in accordance with CCR, Title 8, Section 5192.

All on-site management and supervisors directly responsible for or who supervise employees engaged in site operations will have completed an additional eight (8) hours of supervisor training prior to the start of site activities. This training shall meet CCR, Title 8, Section 5192 specifications.

Written certification of completed training and/or acquired experience for all employees will be supplied to the SHSO for review prior to site operations. All site personnel who have not received the required training prior to the start of site operations will not engage in site operations until such training has been completed.

4.2 SITE SPECIFIC TRAINING

All personnel involved with the proposed site activities must participate in an on-site training program in accordance with CCR, Title 8, Section 5192(e). This will include emergency response guidelines, general health and safety procedures, and site-specific health and safety training. The training program will include Amvac's emergency response, relevant operational procedures regarding the Amvac facility, as well as detailed training regarding the site-specific HASP. The Amvac facility Contractor Health and Safety Program training will be conducted by Mr. Dan Herrick. This training will include (but not be limited to) Amvac chemicals used on site, potential health effects of chemicals used (or have been used) on site, emergency procedures, relevant operational procedures and evacuation procedures.

All site management personnel who will be designated as responsible for responding to on-site emergencies (i.e., field supervisor and SHSO) will be trained in how to respond to expected emergencies prior to the start of site operations.

4.2 TAILGATE SAFETY MEETINGS

The SHSO will conduct daily Tailgate Safety Meetings prior to commencing work at the site. In addition, the Amvac Site Contact will conduct a pre-project safety meeting regarding operational procedures at the adjacent Amvac facility. The following minimum information will be provided to all site personnel involved with the proposed project:

- Names of personnel and alternates responsible for site safety and health
- Safety, health, and other hazards present at the site.
- Hospital directions.
- General Safety procedures and practices to minimize risks from hazards at the site.
- Task specific procedures and practices which site personnel can use to minimize risks from task specific hazards at the site.
- Instruction for safe use of engineering controls and equipment at the site.
- Instruction for safe use of personnel protective equipment at the site
- Medical surveillance requirements including recognition of symptoms and signs which might indicate overexposure to hazards.
- Site control measures.
- Standard operating procedures for the proposed project.
- Amvac facility Emergency/Contingency procedures for the site.

5.0 PERSONAL PROTECTIVE EQUIPMENT AND ENGINEERING CONTROLS

5.1 ENGINEERING AND WORK PRACTICE CONTROLS

The Geoprobe™ and Ramset sampling devices were selected in place of a conventional drill rig because they pose less of a hazard to personnel performing sampling activities. In comparison to a conventional drill rig, the Geoprobe™ and Ramset equipment do not disturb large amounts of soil and do not bring potentially contaminated cuttings to the surface. Reducing contact with potentially contaminated soil minimizes the potential for exposure through inhalation and dermal routes.

When practicable, additional engineering controls shall be implemented to reduce and maintain employee chemical and dust exposures to or below safe levels for those tasks demonstrating known or suspected hazards. These controls will include working outdoors (where possible), using wet methods to minimize potential chemical vapors and dust generations, and using large fans (capable of moving 1,600 to 22,000 cfm of fresh air) to minimize vapors in the breathing zone. Site personnel will also be instructed to work upwind wherever possible.

5.2 PERSONAL PROTECTIVE EQUIPMENT (PPE) REQUIREMENTS

Personal Protective Equipment

Personal protective equipment (PPE) will be used when the SHSO has determined that available engineering and/or work practice controls are impractical or insufficient to protect personnel during site operations.

The SHSO may upgrade or downgrade the level of PPE used at the Site based on site conditions and air monitoring results. A summary of the minimum Level of Protection (LOP) requirements are outlined below:

Level A - Self-contained breathing apparatus (SCBA); totally-encapsulating suit; chemical-resistant boots and gloves; two-way radio communications; hardhat.

Level B - SCBA or SAR with escape SCBA; chemical resistant suit, boots, and gloves; hardhat.

Level C - Air-purifying respirator (half or full-face); chemical resistant suit; chemical-resistant boots; chemical-resistant gloves; safety glasses; hardhat.

Level D - Coveralls; steel toe boots; work gloves (leather or canvas); safety glasses; hardhat.

The proposed PPE requirements are summarized on Table 5-1. Permeation/penetration data provided by the manufacturer and MSDS data were reviewed in the selection process for the suit and glove

recommendations. In addition, COC and existing subsurface data were reviewed to determine appropriate PPE for each AOC.

PPE will be inspected to verify that there are no cuts, tears, or other damage prior to donning. Qualitative fit-testing is required for all personnel wearing negative pressure respirators. A positive and negative pressure check must be conducted whenever donning a respirator. Personnel are not permitted to wear a respirator if they have facial hair that interferes with the sealing surface of the respirator. Contact lenses are not allowed for use with any respirator. Respirators will be equipped with an end-of-life service indicator.

Air Monitoring (Section 7.0) will be performed to assess the need for stopping work and re-evaluating the LOP proposed on Table 5-1. In addition, the SSHO has the authority to stop work and re-evaluate effectiveness of the proposed LOP.

Rationale for the proposed LOP, by task, is presented below:

D Level D protection will be required during Task 1 – Utility Clearance. Level D protection is supported by the non-intrusive nature of the proposed activity and is consistent with Amvac's site worker level of protection.

C Level C protection will be required during Tasks 2 (Ramset/Geoprobe Sampling) and 4 (Equipment Decontamination – Ramset/Geoprobe) for personnel in the exclusion zone or for any other personnel associated with these tasks who could potentially be exposed to the COC. Level C protection is supported by the following:

- Anticipated routes of exposure (inhalation and dermal contact)
- Proposed monitoring to assure PELs are not exceeded (Section 7.0)
- Proposed engineering controls (fans and dust suppression with water) and work practices (Geoprobe/Ramset in place of an auger drill rig)
- Hazard analysis presented in Section 3.2 of this report which included assessment of the following parameters associated with the COC:
  - Toxicity
  - Vapor pressure
  - Chemical form as a vapor, liquid, or solid

Standard Operating Procedures for equipment and personnel decontamination are included in Attachment 8.

6.0 EXPOSURE MONITORING PLAN

This section explains the general concepts of an exposure monitoring program and specifies the monitoring activities that will take place during project implementation. Exposure monitoring will be conducted using a combination of direct reading instruments and personal exposure monitoring methods. Direct reading instruments will be used in accordance with manufacturers' instructions. Personal exposure monitoring will be conducted according to established verifiable methods, unless no method has been established. NIOSH, OSHA, EPA and California regulatory agencies have established verifiable sampling methods.

The purpose of air monitoring is to identify and quantify airborne contaminants in order to verify and determine the LOP required. Initial screening for identification is often qualitative, i.e., the contaminant, or the class to which it belongs, is demonstrated to be present, but the determination of its concentration (quantification) requires additional testing. Two principal approaches are available for identifying and/or quantifying airborne contaminants:

- The on-site use of direct-reading instruments which provide real-time data
- Laboratory analysis of air samples obtained by gas sampling bag, collection media (i.e., filter, sorbent, etc.), or wet-contaminant collection methods.

6.1 DIRECT-READING MONITORING INSTRUMENTS

Direct-reading instruments provide information at the time of sampling, enabling rapid decision-making. Data obtained from the real-time monitors are used to ensure proper selection of personnel protection equipment (PPE), engineering controls, and work practices. The instruments provide the user with the capability to determine if site personnel are being exposed to concentrations that exceed exposure limits or action limits for specific hazardous materials.

Of particular significance, especially during initial entries, is the potential for Immediately Dangerous to Life and Health (IDLH) conditions and oxygen-deficient atmospheres. Real-time monitors can be useful in identifying any IDLH conditions, toxic levels of airborne contaminants, flammable atmospheres, or radioactive hazards. Periodic monitoring of conditions is critical, especially if exposures may have increased since initial monitoring or if new site activities have commenced.

The following types of direct reading monitoring instruments will be utilized:

- Photoionization Detector (PID) for Organic Vapors
- Combustible Gas Indicator/Oxygen Meter
- Noise Meter
- Dust Monitor

Direct-reading monitoring will be performed during all tasks. If any values greater than the action limits presented below are obtained, work will stop until the source of the contaminant can be located, and appropriate controls applied.

6.1.1 Action Limits

Action limits employed during site activities are based upon the COC and their associated toxicological properties. Although it is not expected, if olfactory breakthrough occurs at any time during Level C or Level B activities, work shall cease until either the substance dissipates or equipment maintenance or protective upgrade prevents further exposure. Action limits for organic vapors,combustible gas, oxygen, and dust are summarized on Table 7-1.

The organic vapor action limits are based upon readings obtained with a PID. This instrument measures the total organic vapors present in the sampled air. These readings will be used to confirm the selection of Level C protective equipment for potential exposure to organic vapors in all AOCs. Air monitoring for background levels of organic vapors will be performed prior to the start of work activities.

A PID will be used to monitor for the volatile chemical of concern acetone. The associated PEL in ppm or mg/m^3, ionization potential, and correction factor (based on calibration to isobutylene) are provided on Table 7-2.

The proposed action limit of 10 ppm for AOC 12 is a conservative value selected to minimize potential worker exposure. Acetone is the only volatile chemical anticipated in this AOC. The action limit for acetone using the above equation is 236.3 based on a PEL of 750 ppm and a RR of 0.63. Therefore, use of 10 ppm is considered conservative and appropriate.

Monitoring for combustible gases and oxygen shall be performed whenever evaluating a sump, containment structure, or area of suspected heavy organic contamination. In addition, monitoring will be performed whenever fossil fuel burning equipment is utilized in confined areas (buildings or areas with poor ventilation), prior to initiation of any activities utilizing spark or flame producing equipment, or prior to confined space entry. The action limits provided on Table 7-1 are based on standard industry protocol. The SHSO will be responsible for modifying the action limits to address actual site conditions or to incorporate additional information obtained during the site assessments.

In addition to monitoring for exposure to hazardous substances, site workers will also be monitored for exposure to excessive noise levels in accordance with CCR, Title 8, Division 1, Chapter 4, Subchapter 7, Article 105 (Sections 5095-5100). Hearing protection will be made available to all employees exposed to an 8-hour time weighted average (TWA) noise level of 85 dbA. At an 8-hour TWA noise level of 90 dbA (measured on the A-scale, slow response), exposed employees will be required to wear PPE (i.e., ear

plugs). Any exposed employee with a hearing impairment will be required to wear hearing protection when noise levels exceed 85 dbA.

Noise levels will be monitored by the SHSO by using a Dupont SLM1 single frequency noise monitor (or equivalent). The SHSO will initially measure the level of noise created by the hollow-stem drill rig, Geoprobe™ and Ramset system, which will be used for drilling and obtaining soil samples. If the noise level from heavy equipment is near 85 dbA, periodic monitoring will be continued. No other sources of excessive noise are anticipated during the proposed project. The action limits provided on Table 7-1 are based on standard industry protocol. The SHSO will be responsible for modifying the action limits to address actual site conditions or to incorporate additional information obtained during the site assessments.

If climatic and surface soil conditions adversely impact ambient air quality with particulate matter for extended time periods, direct reading and/or personnel time-air monitoring may become necessary. Dust suppression methods (wet methods, dust solutive, etc.) will be incorporated to minimize airborne particulates and dusts. In the event that dust suppression activities are not successful, the following dust air monitoring plan will be implemented:

- The SHSO will identify all source sites containing contaminated surface soils which could become airborne given the right conditions
- A visual inspection of wind and its effects on the surface soils will be made by the SHSO. Visual dust movement warrants Level C PPE or greater.
- If dusty conditions persist for five minutes or greater, it will be the responsibility of the SHSO to sample the breathing zone with a dust monitor (MiniRAM PDM-3 or equivalent) and compare the values to the recommended action limits to assess the need to stop work.

Onsite personnel may also be exposed to chemicals present in soil as a liquid or solid through inhalation of dust particles. The action limit for dust containing a specific contaminant "Q" may be estimated by the following equation:

$$\frac{(10^6 \text{ mg/kg}) \text{ (PEL of Q mg/M}^3)}{\text{(dust conc. of Q mg/kg)}} = \text{Dust mg/M}^3 \text{ Action Limit}$$

A conservative dust action limit of 2.5 mg/M^3 and the PEL for dicrotophos (this compound was selected because it has the lowest PEL for non-volatile COC) of 0.025 mg/M^3 were input into the above equation. Based on these assumptions, a dicrotophos concentration greater than 10,000 mg/kg would be required before the proposed dust action limit would be exceeded. These concentrations are not anticipated. In addition, dust concentrations of 2.5 mg/M^3 are not anticipated based on the proposed Geoprobe/Ramset sampling technology.

6.1.2 Air Monitoring Location and Frequency

This subsection describes the location and frequency of air monitoring throughout the course of work in the Exclusion Zone (EZ), using real-time or integrated sampling techniques.

Prior to entering an EZ, all field personnel will, at a minimum, utilize the LOP outlined in this HASP. During the period of active work in any EZ, real-time monitoring will be performed by the SHSO or his designated representative in each active work area as deemed necessary. Real-time measurements will be made as near as feasible to the breathing zone of the worker with the greatest exposure potential. Any concentration above the baseline action limits specified in the HASP will be reported to the SHSO. At a minimum, real-time measurements will be taken every 15 minutes, or when task or exposure conditions change whichever frequency is less. Real-time measurements will cease when enough historical data is generated to warrant its cessation.

Baseline (background) monitoring will be accomplished periodically (minimum of once at the start and end of the site activity and when any abnormal readings are recorded in the EZ) by conducting a downwind and upwind sampling of the EZ perimeter with a MiniRAM PDM-3 and/or a PID when appropriate.

Within 15 working days after the receipt of the results of any monitoring performed, the SSHO must notify the affected employees of these results in writing either individually or by posting the results in an appropriate location that is accessible to the affected employees.

6.2 Calibration Protocol

Real-time sampling instruments will be calibrated and used in accordance with manufacturers' instructions. Direct-reading instrument calibration will be verified and documented before and after use (when necessary). At a minimum, all real-time sampling instruments will be calibrated prior to each work shift.

The TWA sampling, analytical, and calibration protocols described in applicable NIOSH methods will be followed. Documentation and reporting of measurements will be conducted according to these protocols.

All area and personal sampling pumps will be calibrated before and after each sampling period with the use of a calibrated rotameter or when available at primary calibration level. When used, the rotameter will be calibrated with a primary source every six months and records of such calibration shall be kept. A series of three pre- and post-sampling flow rates will be taken to equal a combined average flow rate for each sample collected.

6.3 Air Monitoring Documentation

The SHSO will maintain a daily air monitoring record for all air monitoring activities as part of the air sampling program. The record will include, as a minimum, the following:

a. Collection date;
b. Sample identification number (for personnel samples);
c. Location sampled;
d. Task sampled;
e. Duration of each sample collected;
f. Ambient temperature and humidity of sampling period;
g. Pre- and post-sampling train flow calibration; and
h. Any pertinent comments.

All monitoring is to be performed under the direction of the SHSO (or his qualified designee) in accordance with this monitoring plan. Monitoring protocols and contaminant action levels are summarized on Table 7-1. *Direct Reading Reports and Instrument Calibration Logs are provided in* Attachment 9.

6.4 CESSATION OF FIELD ACTIVITIES

If monitoring readings reach levels which have been designated as "Stop Work", the field team will move to an upwind location and wait for conditions to return to levels for the appropriate LOP. Field teams will not re-enter an evacuated work area without approval from the SHSO. If conditions return to an appropriate LOP, the field team will resume work. If "Stop Work" action limits are reached for a second time, all personnel will move upwind while the SHSO or the designated alternate attempts to identify the source of the exposure, and, if possible, implement control measures. If control measures fail to reduce exposures, or if the source cannot be identified, the team will abandon the location and provide the appropriate notifications.

7.0 SITE CONTROL (WORK ZONES AND SECURITY MEASURES)

7.1 WORK ZONES

The field supervisor or SHSO will be responsible for conducting site operations in a controlled fashion to reduce the possibility of contact with any site contaminants present; and to prevent the removal of site contaminants by personnel and/or equipment leaving the site.

The Exclusion Zone is the area where the contaminated materials are expected to be present; therefore, the prescribed PPE must be worn by all personnel within this zone. For the purposes of the proposed project, the Exclusion Zone will be established with a perimeter of 25 feet around each work location. *Caution tape or flexible orange fencing will be used to secure work areas and exclude non-construction* workers.

The Contamination Reduction Zone (CRZ) will be located immediately outside of the Exclusion Zone and encompass a perimeter of 10 feet outside the Exclusion Zone. The purpose of this zone is to minimize the transfer of contamination from the Exclusion Zone to the Support Zone (which is considered the non-contaminated area). Personnel entering the CRZ will be wearing the prescribed PPE. Personnel exiting the Exclusion Zone will conduct decontamination activities (described in Section 6.3, below) in the CRZ before entering the Support Zone.

8.0 DECONTAMINATION PROCEDURES

8.1 PERSONNEL AND EQUIPMENT DECONTAMINATION PROCEDURES

Personnel decontamination procedures will be required when Level C or higher levels of protection are used by personnel. The Field Supervisor will review the personnel and equipment decontamination procedures with all employees involved in the proposed project, as well as relevant employees at the Amvac facility. The SHSO will monitor decontamination procedures for their effectiveness. Any deficiencies will be reported to the Field Supervisor and will be improved as needed. The following general procedures related to personnel and equipment decontamination should be employed:

- Wipe monitoring equipment clean.
- Brush clean and/or pressure-wash heavy equipment all contaminated equipment.
- Perform decontamination in a manner that minimizes waste generation.
- Set up containment systems as necessary for collection of decontamination solutions.
- Containerize spent decontamination solutions in appropriately labeled U.S. Department of Transportation-approved drums.
- Dispose all decontamination waste, as appropriate.
- Minimize traffic through areas of obvious or known contamination and do not handle or touch contaminated materials directly.
- Limit the extent of equipment contact with contamination if possible.

See Attachment 8 for equipment and supplies needed to perform decontamination and for specific procedures to be used for decontamination of personnel.

Drums of decontamination solutions, waste water, and waste PPE materials will be handled, labeled, transported, and disposed in accordance with CCR Title 8, Section 5192 (j). It is anticipated that only a small amount of waste decontamination materials will be generated during the proposed project (very little soil cuttings will be generated during drilling and sampling); therefore, a spill prevention plan will not be prepared for the project. However, all drums will be handled with extreme care and in accordance with all applicable regulations.

9.0 STANDARD OPERATING PROCEDURES

9.1 INITIAL SITE ENTRY PROCEDURES

The following procedures should be followed during initial site entry:

- Locate nearest available telephone. Indicate location on site map.
- Determine wind direction, establish hotline, and set up decontamination facilities. Note wind direction and decontamination facilities on site map.
- Distribute emergency information. Confirm and then post the emergency phone number list and the hospital route.
- Designate at least one vehicle of the contractors for emergency use. An Amvac vehicle should also be identified as a back-up vehicle for emergency use.
- If toilet facilities are not located within a 5-minute walk from the decontamination area, either provide a chemical toilet and hand washing facilities or have a vehicle available (not the emergency vehicle) for transport to nearby facilities.
- Prior to working on-site, conduct an inspection for physical and chemical hazards.
- Conduct or review utility clearance prior to start of work, if appropriate.
- Note any specialized protocols particular to work tasks associated with the project.

10.2 DAILY OPERATING PROCEDURES

The Field Supervisor will review the daily operating procedures with all employees involved in the proposed project, as well as relevant employees at the Amvac facility. The following daily operating procedures should be followed during completion of the proposed scope of work:

- Field Supervisor will hold a Tailgate Safety Meeting prior to start of work. A tailgate safety meeting form is included in Attachment 10.
- Use monitoring instruments and follow designated protocol and contaminant action levels.
- Use PPE as specified.
- Use hearing protection if noise levels exceed 90 dbA.
- Remain upwind of operations and airborne contaminants, if possible. Be aware of changes in wind direction.
- Establish a work/rest regimen when ambient temperatures and protective clothing create a potential heat stress hazard.
- Do not carry cigarettes, gum, etc. into contaminated areas.
- Refer to SHSO for specific safety concerns for each individual site task.
- Always employ the "Buddy System"
- Be alert to your own physical condition. Watch "buddy" for signs of fatigue, exposure, etc.
- All accidents, no matter how minor, must be reported immediately to the SHSO.

10.0 CONTINGENCY PLAN

Prior to the start of site operations, the SHSO will communicate and/or meet the Amvac site representative who will be responsible for meeting with local emergency management and public safety officials (fire, police, local health officials, etc.) for the purpose of coordinating site-specific emergency procedures with any emergency response efforts that would be performed by each specific agency.

The SHSO and field supervisor will hold up-to-date certifications in basic first aid and CPR. At least one of these individuals will be present at the site during all site operations.

The hospital identified in Section 11.4, Santa Marta Hospital, has been contacted and is capable of treating chemical exposure/trauma patients.

10.1 EMERGENCY INCIDENT PROCEDURES

In the event of an emergency, the following actions should be taken:

Step 1: Notify the SHSO and Field Supervisor and size-up the situation based on available information.

Step 2: As necessary, request assistance from outside sources and/or allocate personnel and equipment resources for response.

Step 3: Survey and assess existing and potential hazards.

Step 4: Contact the Amvac Site Contact and apprise of the situation.

Step 5: As appropriate, evacuate site personnel and nearby public; contain hazard.

Step 6: Prepare an incident report.

A site plan showing the evacuation routes from the Site is enclosed as Attachment 1.

10.2 EMERGENCY INJURY PROCEDURES

If an injury occurs at the Site, the following actions should be taken:

Step 1: Get medical attention for the injured person immediately.

Step 2: Notify the SHSO and Field Supervisor.

Step 3: Depending on the type and severity of the injury, call the paramedics (American Medical Response at 323-808-2288 or Emergency Services, Inc. at 562-692-6775).

Step 4: Notify the injured person's Human Resources office.

Step 5: The SHSO is responsible for preparing an incident report.

Step 6: The SHSO will assume charge during a medical emergency.

Table 11-1 provides information on emergency contacts and should be distributed to all workers entering the Site.

10.3 EMERGENCY PERSONNEL DECONTAMINATION PROCEDURES

In the event of an injury to a person in the Exclusion Zone, first aid personnel should decide if the victim's injuries might be such that movement would worsen the victim's injuries. If so, or if the victim is unconscious or unable to respond, no attempt should be made to move the victim to the decontamination area. Paramedics should be contacted, as directed in Section 7.2, who will determine if the victim should be moved and if his/her PPE should be removed. The PPE will be removed in the Contamination Reduction Zone (CRZ), at the direction of the paramedics. However, if paramedics decide to leave the victim in the PPE, he/she will be wrapped in a tarp or other covering to protect the ambulance and crew during transport. If the victim is contaminated with material, which may cause additional injury or immediate health hazards, the PPE will be carefully removed and the victim washed appropriately.

10.4 HOSPITAL NAME/ADDRESS/ROUTE

Name:	USC Medical Center	
Address:	1200 North State Street, Los Angeles, California 90033	
Telephone:	323-226-2622	
Route:	1. Turn left going West on E WASHINGTON BLVD	1.2 miles
	2. Turn RIGHT onto S GRANDE VISTA AVE.	0.7 miles
	3. Turn LEFT onto E 8TH ST.	0.2 miles
	4. Turn RIGHT onto EUCLID AVE.	0.2 miles
	5. Turn LEFT to take US-101 NORTH/SANTA ANA FWY NORTH ramp.	0.3 miles
	6 Merge onto US-101 N	1.6 miles
	7. Take I-10 EAST RAMP towards SAN BERNARDINO.	0.2 miles
	8. Merge onto I-10 E.	0.4 miles
	9. Take the STATE ST/SOTO ST exit	0.2 miles
	10. Turn LEFT onto N STATE ST.	0.3 miles

A hospital route map is provided in Attachment I. The map should be distributed to all workers at the job site and each worker should review this map to become familiar with the hospital route.

11.0 CONFINED SPACES

Confined space situations are not anticipated to be encountered given the nature of the sampling process (i e., samples will be collected primarily in open areas).

12.0 SPILL CONTAINMENT

Waste generated during sampling activities (drill cuttings and decontamination liquids) will be handled by Amvac in accordance with applicable waste handling protocols. Spills are not anticipated; however, absorbent material will be available for containment in the event of a spill. Material will be contained in 55 gallon drums or other approved equipment for analysis and disposal.

13.0 SANITATION

Sanitation facilities will be provided in accordance with CCR Title 8, Section 5192 (n). Drinking water at the Site will be provided in a large "Thermos"-type container with dispenser and disposable cups. Wash water will be provided by a hose and will be contained in portable tubs. Decontamination of Site workers will be conducted at the Site, as described in Section 9 and Attachment 8. Toilet facilities, showers, and change rooms are located on the Amvac facility and are available.

14.0 DRUM HANDLING

Any waste generated will be drummed and properly labeled per USEPA, DOT and OSHA protocol. Drums will be stored onsite and disposed by Amvac.

15.0 ILLUMINATION

Areas in which work is to be effected shall meet the following specifications:
Minimum Illumination Intensities (foot-candle's)

Area or Operations	Foot Candles
General Site Areas	5
Indoors: Warehouses, corridors, hallways and exit ways	5
General Shops, active storerooms, workrooms	10
Access ways-General Outdoor	3
Access ways-General Indoor	5
Construction Areas-General Outdoor	3
Construction Areas-General Indoor	5

Tables

Table 3-1
Assessment of Non-Chemical Hazards

	Non-Chemical Hazard	Yes	No	Task No. (s)
1	Electrical - overhead lines (if heavy equipment is used)	x		2
2	Electrical – underground lines	x		2
3	Gas/Water lines	x		2
4	Coring Equipment	x		2
5	Drilling Equipment (Geoprobe™, Ramset, Hollow Stem Auger)	x		2
6	Heavy Equipment		x	
7	Machinery	x		2
8	Heat Exposure		x	
9	Cold Exposure		x	
10	Oxygen Deficiency		x	
11	Confined Spaces		x	
12	Noise	x		2
13	Ionizing Radiation		x	
14	Non-ionizing Radiation		x	
15	Fire	x		1 - 3
16	Vehicle Traffic	x		1 - 3
17	Shoring		x	
18	Scaffolding		x	
19	Biologic		x	
20	Holes/Ditches		x	
21	Steep Grades		x	
22	Slippery Surfaces	x		1 - 3
23	Uneven Terrain		x	
24	Unstable Surfaces		x	
25	Elevated Surfaces		x	
26	Poor Lighting		x	

TABLE 3-2
ASSESSMENT OF CHEMICAL HAZARDS FOR CHEMICALS OF CONCERN

Task No.(s)	AOC Number	Chemical Name (or class)	PEL	Other Pertinent Limits (Specify)	Potential Exposure Pathways	Health Effects
2 and 4	6	Acetone	750 ppm 1780 mg/m^3	2,500 ppm - IDLH 10% LEL	Inhalation; dermal; ingestion	Skin, eyes; nose; throat irritation; headache; dizziness; CNS depression
2 and 4	2, 4, and 10	Acids				
2 and 4	2 and 10	Aldrin	0.25 mg/m3 (skin)	None cited	Inhalation; dermal; ingestion	Skin irritation; possible liver damage; potential liver carcinogen; convulsions; seizures
2 and 4	4 and 10	Bromine	0.1 ppm 0.7 mg/m^3	3 ppm IDLH 0.3 ppm/2 mg/m^3 STEL	Inhalation; dermal; ingestion	Dizziness, headache, cough; pulmonary edema; pneumonia; abdominal pain; measles; eye and skin burns; diarrhea; nosebleeds; lacrimation (tears)
2 and 4	2 and 10	Caustics				
2 and 4	4 and 10	Chloral (Trichloro-acetaldehyde)	None cited	None cited	None cited	Attacks or dehydrates living tissue; narcotic; produces sleep; shallow or irregular respiration, weak pulse, flushed face; stupor and complete muscular relaxation; delirium; excitement; nausea; vomiting; irritate, burn, blind eyes; burns and blisters to the skin; smell is irritating and gives good warning
2 and 4	1, 2 and 10	Chlordane	0.5 mg/m^3	100 mg/m^3 - IDLH	Inhalation; dermal; ingestion	Eye & skin irritation; CNS depression; peripheral nervous system effects; possible liver damage; potential liver carcinoma
2 and 4	1 and 10	Chlorpyrifos	0.2 mg/m^3	0.6 mg/m^3	None cited	Inhibition of plasma cholinesterase; acidosis; severe breathing disorders; abdominal cramps; muscle twitching; coughing; nausea; vomiting; general weakness
2 and 4	2 and 10	Cyclo Sol (Solvent Naphtha)	100 ppm 400 mg/m3	1,000 ppm - IDLH	Inhalation; absorption	Dermal, ingestion, nausea, vomiting; convulsions, salutation, sweating, irritation to skin and eyes; wheezing, chest tightness; diarrhea, anorexia, miosis, muscular spasms; ataxia; giddiness, cardiac irregularities, low blood pressure
2 - 4	2-4 and 10	Isopropyl ester of 2,4-dichlorophenoxyacetic acid (2,4-D)	10 mg/m^3 (value provided is for 2,4-D)	100 mg/m^3 - IDLH (value provided is for 2,4-D)	Inhalation; ingestion; absorption; contact	Liver and kidney injury; somnolence; convulsions; coma; nausea; vomiting; skin and eye irritant; suspected carcinogen; possible teratogen and mutagen
2 and 4	1, 2 and 10	DDT/DDD/DDE	1 mg/m^3	500 mg/m^3 - IDLH	Inhalation; dermal; ingestion	Anxiety, tremor, hyperexcitability and convulsions; Possible liver damage
2 and 4	2 - 4 and 10	1,2-Dibromo-3-Chloropropane (DBCP)	0.001 ppm .01 mg/m^3	None cited (pungent odor at 100 ppb)	Inhalation; dermal; ingestion	Death or serious injury if swallowed or absorbed through skin; carcinogen; reproductive toxin
2 and 4	2, 4 and 10	Dichlorvos (DDVP)	0.1 ppm 1 mg/m^3	100 mg/m^3 IDLH	Inhalation; absorption; dermal	Respiratory system irritant, asphyxia, cardiac arrhythmia; cardiac arrest
2 and 4	4 and 10	Dicrotophos (Bidrin)	0.25 mg/m^3	None cited	Inhalation; absorption	Abdominal cramps; nausea; vomiting; diarrhea; increased sweating; dyspnea; leg tremors; generalized weakness
2 and 4	1, 2 and 10	Dieldrin	0.25 mg/m^3	50 mg/m^3 - IDLH	Inhalation; dermal; skin absorption; ingestion	Seizures; convulsions; suspected carcinogen

TABLE 3-2
ASSESSMENT OF CHEMICAL HAZARDS FOR CHEMICALS OF CONCERN

Task No.(s)	AOC Number	Chemical Name (or class)	PEL	Other Pertinent Limits (Specify)	Potential Exposure Pathways	Health Effects
2 and 4	4 and 10	Dimethylchloroacetoacetamide [CDMAA]	None cited	None cited	Inhalation; absorption	Toxic upon ingestion; direct contact will produce severe eye irritation and moderate skin irritation; respiratory tract irritant
2 and 4	4 and 10	Dimethyl-formamide (DMF)	10 ppm 30 mg/m^3	500 ppm - IDLH	Inhalation; absorption; dermal	Liver and kidney irregularities; nausea, vomiting, colic; liver damage; CNS disorders; suspected carcinogen
2 and 4	1 and 10	Endosulfan II	0.1 mg/m^3	None cited	Ingestion; inhalation; dermal; absorption	Possible carcinogen and teratogen; reproductive effects; CNS stimulant; convulsions
2 and 4	1 and 10	Endosulfan I	0.1 mg/m^3	None cited	Ingestion; inhalation; dermal; absorption	Possible carcinogen and teratogen; reproductive effects; CNS stimulant; convulsions
2 and 4	1 and 10	Endrin	0.1 mg/m^3	2 mg/m^3 - IDLH	Ingestion; inhalation; dermal; absorption	Suspected carcinogen; possible teratogenic and mutagenic effects; CNS stimulant; highly toxic; dangerous fire/explosion hazard
2 and 4	2 and 10	Ethylene Dibromide (EDB)	0.13 ppm 1 mg/m^3	100 ppm IDLH	Ingestion, inhalation, dermal absorption, contact	Mucous membrane, eye and skin irritant. Liver and kidney damage; Probable human carcinogen
2 and 4	4 and 10	Hydrochloric Acid	5 ppm 7 mg/m^3	50 ppm - IDLH	Ingestion; inhalation; dermal; absorption	Irritation and burning of eyes, nose, throat; burns; choking
2 and 4	4, 6 and 10	Hydraulic Oil/ Lubricating oil	5 mg/m^3 (Oil mist)	10 mg/m^3 - STEL 2500 mg/m^3 - IDLH	Dermal; ingestion; inhalation; absorption	Dermititus
2 and 4	2, 4, and 10	Isopropyl Alcohol (IPA)	400 ppm 980 mg/m^3	2000 ppm - IDLH (10%LEL) 500 ppm STEL	Inhalation; ingestion; absorption; contact	Irritation of eyes, nose, throat; dizziness, headache; drowsiness; dermatitis
2 and 4	2 and 10	Kerosene	None cited	100 ppm NIOSH	Inhalation; ingestion; dermal	Irritation of eyes, skin, nose, throat; headache; nausea; vomit; weakness; chemical pneumonia; weakness; burning in chest
2 and 4	2 and 10	Lindane	0.5 mg/m^3	50 mg/m^3 - IDLH	Inhalation; absorption; dermal; ingestion	Irritation of eyes, skin, nose, throat; headache; nausea; convulsions, muscle spasms; breathing difficulty; cyanosis
2 and 4	1 and 10	Metaldehyde	None cited	None cited	Inhalation; absorption; dermal; ingestion	Suspected carcinogen; moderately toxic; skin and eye irritant
2 and 4	2 and 10	Metham sodium (Carbamate)	None cited	None cited	Inhalation; absorption; dermal; ingestion	Diarrhea, cyanosis; tremors; convulsions; miosis; blurred vision; tears; sweating; skin irritations
2 and 4	I and 10	Methlocarb	None cited	None cited	Inhalation; absorption; dermal; ingestion	When heated emits very toxic NOx and SOx fumes; CNS effects; possible carcinogen
2 and 4	4 and 10	Methyl acetoacetate	None cited	None cited	Inhalation; ingestion; absorption; contact	Skin and sever eye irritant; flammable
2 and 4	2, 4 and 10	Mevinphos (Phosdrin)	0.01 ppm 0.1 mg/m^3	4 ppm - IDLH 0.03 ppm - STEL	Inhalation; absorption; dermal; ingestion	Human systemic effects; PNS effects vomiting; occular effects; high fever; cramping of lower extremities
2 - 4	2-4 and 10	Naled (Dimethyl-1,2-dibromo-2,2-dichlorethyl phosphate)	3 mg/m^3	200 mg/m^3 - IDLH	Inhalation; absorption; dermal; ingestion	Skin irritant; when heated, emits toxic fumes of Bromine, Chlorine and POx
2 and 4	2 and 10	High Flash Naphtha (Coal tar)	100 ppm 400 mg/m^3	1,000 ppm - IDLH (10% LEL)	Inhalation; absorption; dermal, ingestion	Eyes, nose, skin irritation; dermatitis; lighheadedness; drowsiness
2 and 4	2, 4 and 10	1-Naphthalene-acetic Acid (ammonium, potassium, and sodium salts of)	None cited	None cited	Inhalation; absorption; dermal; ingestion	Skin and eye irritant; nausea; headache; diaphosis; fever; anemia; liver damage; convulsions (Napthylene)

TABLE 3-2
ASSESSMENT OF CHEMICAL HAZARDS FOR CHEMICALS OF CONCERN

Task No.(s)	AOC Number	Chemical Name (or class)	PEL	Other Pertinent Limits (Specify)	Potential Exposure Pathways	Health Effects
2 and 4	1 and 10	Parathion	0.1 mg/m^3	10 mg/m^3 - IDLH	Inhalation; absorption; dermal; ingestion	Irritate eyes, skin, respiratory system; miosis; rhinorrhea (discharge of thin nasal mucus); head; chest tight, wheez, laryngeal spasm, salivation, cyanosis; anorexia, nausea, vomit, abdominal cramps, diarrhea; sweat; muscle fasiculation, weak , paralysis; giddiness, confusion, ataxia; convulsion, coma; low BP; cardiac irregularities
2 and 4	1 and 10	Pentachloro-nitrobenzene (PCNB)	None cited	TLV: 0.5 mg/m^3 (ACGIH)	Inhalation; dermal; ingestion	Possible carcinogen; eye irritation; mutagen; reproductive effects
2 and 4	2 and 10	Pentachlorophenol	0.5 mg/m^3	2.5 mg/m^3 - IDLH	Ingestion; absorption	Carcinogenic; dermatitis; changes in respiration, blood pressure and urinary output
2 and 4	6	PCB (Chlorodiphenyl - 42% chlorine	1 mg/m^3	5 mg/m^3 - IDLH	Inhalation; dermal; ingestion	Irritate eyes; chloracne; liver damage; reproductive effects
2 and 4	6	PCB (Chlorodiphenyl - 54% chlorine	0.5 mg/m^3	5 mg/m^3 - IDLH	Inhalation; dermal; ingestion	Irritate eyes; chloracne; liver damage; reproductive effects
2 and 4	1 and 10	Sevin (Carbaryl)	5 mg/m^3	100 mg/m^3 - IDLH	Inhalation; ingestion; absorption; dermal	Diarrhea, cyanosis; tremors; convulsions; miosis; blurred vision; tears; sweating; skin irritations
2 and 4	1 and 10	Simazine	None cited	None cited	Inhalation; ingestion; absorption; dermal	Possible carcinogen; skin and eye irritant; mutagen
2 and 4	4 and 10	Sodium Hydroxide	2 mg/m^3	2 mg/m^3 - Ceiling 10 mg/m^3 - IDLH	Inhalation; ingestion; dermal	Irritation of eyes, skin, mucus membranes; eye, skin burns; loss of hair; pneumonitus
2 and 4	4 and 10	Sulfuryl Chloride	None cited	None cited	Inhalation; dermal	Liquid may cause burns to skin and eyes; vapors may be irritating to skin, eyes and mucous membranes; inhalation may cause severe irritation of respiratory system and may cause pulmonary edema
2 and 4	1-2 and 10	Toxaphene	0.5 mg/m3	200 mg/m^3 - IDLH	Inhalation; dermal; ingestion	Nausea, vomiting, mental confusion; muscle spasms of the arms and legs; convulsions; possible kidney, thyroid, and liver effects; suspected carcinogen
2 and 4	4 and 10	Trimethyl Phosphite	2 ppm 10 mg/m3	None cited	Inhalation; ingestion; dermal	Irritation of eyes, skin, upper respiratory system; dermatitis

KEY

LEL = Lower Explosive Limit
IDLH = Immediately Dangerous to Life and Health
PEL = OSHA Permissible Exposure Limit; represents the maximum allowable 8-hr. time weighted average (TWA) exposure concentration.
TLV = ACGIH Threshold Limit Value; represents the maximum recommended 8-hr. TWA exposure concentration.
STEL = OSHA Short-Term Exposure Limit; represents the maximum allowable 15 minute TWA exposure concentration.
TLV-STEL = ACGIH Short-Term Exposure Limit; represents the maximum recommended 15 minute TWA exposure concentration.
C = Threshold Limit Value-Ceiling; the concentration that should not be exceeded during any part of the working exposure.
AOC = Area of Concern

Table 5-1
Personal Protective Equipment (PPE) Requirements

TASK NO.(S)	AOC	LOP	LEVEL OF UPGRADE	PPE[a]							ADDITIONAL PPE[a] FOR UPGRADE
				SUIT	GLOVES	FEET	HEAD	EYE	EAR	RESPIRATOR	
1	All	D	---	Std. + Road	Work	Steel	HH**	Glass	---	---	---
2 & 3	12	C	--	TC 9400+ Road	SS/N	Steel+	HH**	Glass or Shield**	Plugs	Half APR + OV/AG/HEPA	Full APR + OV/AG/HEPA, Barricade*

[a] Personal Protective Equipment (PPE):

SUIT:

Std =	Standard work clothes
Tyvek =	Uncoated Tyvek disposable coverall
Barricade =	Barricade™ protective suit
TC 9400 =	Tychem 9400
PE Tyvek =	Polyethylene-coated Tyvek
Chemrel =	Chemrel coverall with hood
Saranex =	Saranex-laminated Tyvek
PVC =	PVC suit
Road =	Roadwork safety vest
Nomex =	Nomex coveralls

GLOVES:

Work =	Work gloves (canvas, leather)
Neo =	Neoprene
PVC =	Poly Vinyl Chloride
N =	Nitrile
V =	Vinyl
L =	Latex
SS =	SilverShield

FEET:

Steel =	Steel-toe boots
Steel+ =	Steel-toe Neoprene or PVC boots
Booties =	PVC or Latex booties

HEAD:

HH =	Hardhat

EYE: =

Glass =	Safety glasses
Goggle =	Goggles
Shield =	Face shield

EAR:

Plugs =	Earplugs
Muff =	Ear muffs

RESPIRATOR:

APR =	Air-purifying respirator
Full APR =	Full face APR
Half APR =	Half face APR
PAPR =	Powered Air-purifying Respirator
SAR =	Airline supplied air respirator
SCBA =	Self contained breathing apparatus
Escape =	Escape SCBA
OV =	Organic Vapor cartridge
AG =	Acid gas cartridge
OV/AG =	Organic vapor/Acid gas cartridge
AM =	Ammonia cartridge
D/M =	Dust/mist pre-filter and cover for cartridge
HEPA =	High efficiency particulate air filter cartridge

OTHER:

** =	Optional use except if specific hazard present
AOC =	Areas of Concern
LOP =	Level of Protection

Table 7-1
Action Limits for Direct Reading Instruments

Instrument Type	Action Limit/Response	Monitoring Location
PID[1]	> 10 ppm[2] - Stop work, evacuate work area, notify SSHO	AOC 12
Combustible Gas Meter	<10% LEL - Continue work, monitor with CGI/O2 meter, ventilate area	AOC 12
	10 - 20% LEL - Continue monitoring with CGI/O2 meter, work with extreme caution, ventilate area	
	>20% LEL - Stop work, evacuate work area, notify SSHO	
Oxygen Meter	19.5 - 23.5% - Continue work, monitor with CGI/O2 meter	AOC 12
	<19.5 or >23.5% - Stop work, evacuate work area, notify SSHO	
Dupont SLM1 single frequency noise monitor (or equivalent), calibrated to 1,000 hz	> 85 dbA - Provide ear plugs or other hearing protection if noise levels exceed 85 dbA 8 hr. time weighted average	AOC 12
Miniram Personal Dust Monitor model PDM-3, Hazdust HD 10000 (or equivalent)	Background to 2.5 mg/m3 - Continue work, monitor with MiniRAM meter	AOC 12
	2.5 mg/m3 to 5 mg/m3 - implement dust suppression activities	
	> 5 mg/m3 - Stop work, notify SSHO	

[1] Action limits are based on calibration of PID with isobutylene. Where applicable, action limits have been adjusted to account for published response factors - i.e. actual instrument reading should be compared to action limit to assess compliance with proposed action limits.

[2] Conservative action limit of 10 ppm selected. Only volatile anticipated in these AOCs is acetone which would have a much higher action limit.

Table 7-2
Chemical Data for PID Monitoring

Compound	PEL	Vapor Pressure (mmHg)	Ionization Potential	Correction Factor	
				10.6 Volt Lamp	11.7 Volt Lamp
Acetone	750 ppm/1,780 mg/m3	231	9.71	1.1	1.4

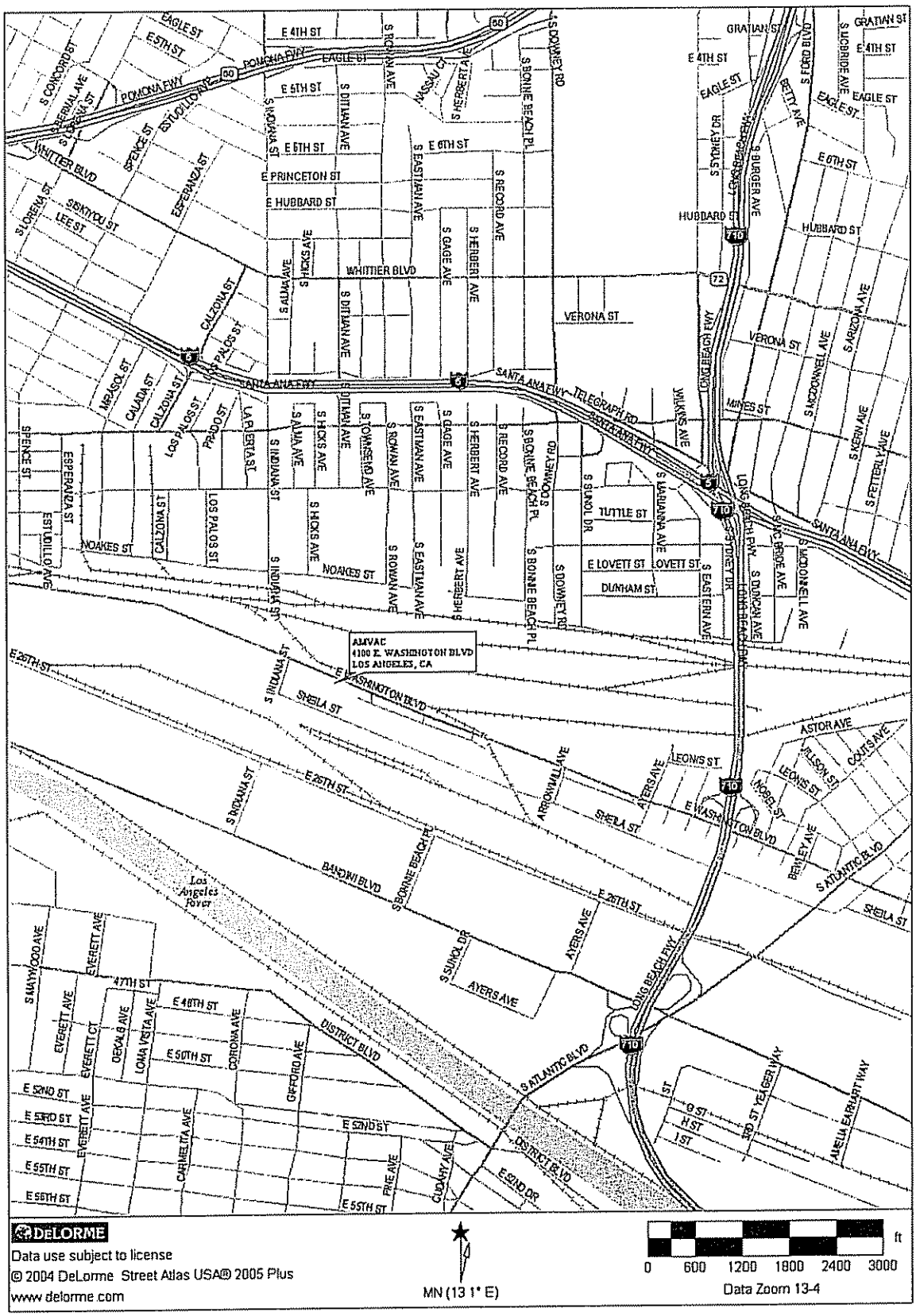
Table 11-1
Emergency Contact List

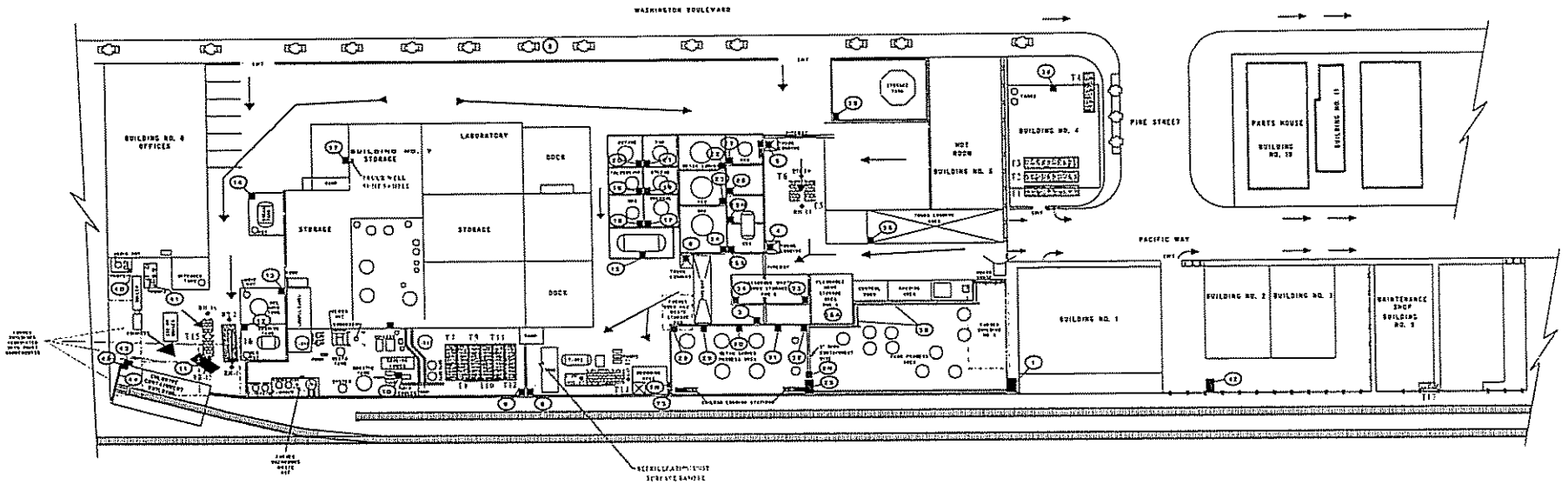
TITLE	NAME	TELEPHONE NUMBER
Police Department	Police	911
Fire Department	Fire Department	911
Local Hospital	USC Medical Center	323-226-2622
Local Ambulance/Rescue	American Medical Response Emergency Services, Inc.	323-808-2288 562-692-6775
Health and Safety Manager	Craig Stolz	949-470-1937
Site Contact	Doug Ashmore	323-264-3910
Project Manager	Greg Dickinson	949-470-1937
Field Supervisor(s)	Greg Dickinson	949-470-1937
Site Health and Safety Officer(s)	Greg Dickinson Dan Herrick (AMVAC)	949-470-1937 323-264-3910
Pacific Edge Engineering, Inc.		949-470-1937

ATTACHMENT 1

SITE MAP(S)

FIGURE 1
SITE LOCATION MAP





LEGEND

- LOCATION OF INDICATED SUMP AND NUMBER
- DIRECTIONAL FLOW OF DRAINAGE
- BORING ASSOCIATED WITH UST CLOSURE
- UNDERGROUND STORAGE TANK - CLOSED BY EXCAVATION
- UNDERGROUND STORAGE TANK - CLOSED IN PLACE

SCALE
1" = 30'

REV	DATE	DESCRIPTION	BY	APPROVED
3	12/18/01	ADDED NEW BASEMAP WITH SUMPS, SURFACE FLOW	GRD	GRD
2	5/4/99	ADDED TANK LOCATION (T17), FORMATTING	GRD	GRD
1	1/5/99	ADDED WELL SAMPLES/TANK LOCATIONS	VLB	GRD

REVISIONS

AMVAC CHEMICAL CORPORATION
4100 EAST WASHINGTON BLVD., LOS ANGELES, CALIF 90023
(323) 264-3910
TELEX 331511

	BY	DATE
DRAWN:		
CHECKED:		
APPROVED:		
APPROVED:		

PLOT DATE 12/18/01

FIGURE 2
FACILITY MAP

N:\EIE\Emi\Sip\Figure2.SKF

ATTACHMENT 2

AMVAC SITE VISITOR LOG

AMVAC SITE VISITOR LOG

Name	Social Security #	In	Out

ATTACHMENT 3

SUBCONTRACTOR TRAINING CERTIFICATION

Subcontractor Personnel Authorized to Perform Work On-Site:

Name/Company	Subcontractor Training Summary					Training Verified (Field Supervisor Initials)
	40-hr. Hazwoper	8-hr. Hazwoper	8-hr. Super/Mgr.	Medical Surveillance	Other Training	
1.						
2.						
3.						
4.						
5.						
6.						
7.						
8.						
9.						
10.						

ATTACHMENT 4

JOB SAFETY ANALYSES

JOB HAZARD ANALYSIS - Geoprobe/Drilling
Amvac Chemical Corporation

Principal Steps	Potential Hazards	Recommended Controls, Inspection, and Training Requirements
Position equipment to drilling location.	Backing into a person, object or other obstruction while attempting to position equipment.	Personnel shall ensure all personnel, objects, equipment and/or other obstructions are not in the path of the equipment. Driver shall use the truck horn while moving the truck in reverse. Whenever possible, driver shall use a spotter. Only licensed personnel shall operate equipment. Driver shall ensure that equipment is positioned on stable, even terrain.
Position equipment over drilling location.	Crushing fingers, hands; Lacerations of fingers, hands.	Personnel shall ensure that all body parts are positioned away from unit. Personnel shall not wear loose clothing, long hair, or jewelry which may get entangled in the equipment. Personnel shall ensure that equipment is parked/bolted in-place, brake set, and wheel chocked. Use appropriate tools. Only qualified personnel should position the equipment.
Hand auger 1-5 feet	Electrical shock.	Review utility maps/drawings, if available. Mark Utilities, if known. Complete utility survey. Hand auger slowly, paying careful attention to underground utilities.
Operate equipment	Flying objects striking head, face and/or body.	Personnel shall ensure that appropriate face protection is worn. Personnel shall ensure that appropriate head and body protection is worn. Personnel shall position body appropriately, to minimize being stuck by flying debris. Only qualified personnel should operate the equipment.
Operate equipment	Crushing fingers, hands; Lacerations of fingers, hands.	Personnel shall ensure that all body parts are positioned away from unit. Personnel shall not wear loose clothing, long hair, or jewelry which may get entangled in the equipment. Personnel shall ensure that appropriate hand protection is worn at all times. Personnel shall ensure that equipment is parked/bolted in-place, brake set, and wheel chocked. Use appropriate tools. Only qualified personnel should position the equipment.

JOB HAZARD ANALYSIS - Geoprobe/Drilling
Amvac Chemical Corporation

Principal Steps	Potential Hazards	Recommended Controls, Inspection, and Training Requirements
Operate equipment	Chemical exposure from drilling activities.	Personnel shall ensure that appropriate personal protective equipment is worn in accordance with the site specific HASP. Personnel shall ensure that appropriate monitoring is performed in accordance with the site specific HASP during sampling activities. If drilling location is inside a building, vehicle/equipment exhaust shall be piped outside the building whenever possible. If drilling in a confined space Oxygen, LEL, and CO levels shall be continuously monitored in accordance with the site specific HASP. Supervisory personnel shall ensure that appropriate personnel and air monitoring is performed in accordance with the site specific HASP. Personnel shall ensure that appropriate hand and body protection is worn if contaminated materials have the potential to come in contact with the body. Utilize wet methods, natural air currents or employ forced air techniques (fans, blowers, etc.) to minimize chemical exposure. Only qualified and appropriately trained personnel should operate the equipment in contaminated areas.
Drill and drive sample	Noise.	Use hearing protection when drilling and driving sample.
Drill and drive sample	Slips, Trips, and Falls.	Properly illuminate the work space (if adequate natural light is not available). Ensure footing is stable, and free from slippery materials.
Drill and drive sample	Chemical exposure from drilling activities.	Personnel shall ensure that appropriate respiratory protection is worn in accordance with the site specific HASP. Personnel shall ensure that appropriate personnel and air monitoring is performed in accordance with the site specific HASP. Personnel shall ensure that appropriate glove, and body protection are worn in accordance with the site specific HASP. Only qualified and appropriately trained personnel should operate the Geoprobe™ unit in contaminated areas.
Pull Rods	Crushing fingers, hands; lacerations of fingers, hands.	Personnel shall ensure that appropriate personal protective equipment is worn. Personnel shall ensure that all body parts are positioned away from unit. Personnel shall not wear loose clothing, long hair, or jewelry which may get entangled in the equipment. Personnel shall position body appropriately, to minimize being stuck by flying objects. Personnel shall use appropriate tools. Only qualified personnel should operate the equipment.
Decontaminate equipment	Chemical exposure.	Personnel shall ensure that appropriate PPE is worn, in accordance with the site specific HASP, if contaminated materials have the potential to come in contact with the body.

JOB HAZARD ANALYSIS - Geoprobe/Drilling
Amvac Chemical Corporation

Principal Steps	Potential Hazards	Recommended Controls, Inspection, and Training Requirements
Personal Protective Equipment	Hazard Assessment.	Personnel shall ensure that appropriate PPE is worn, in accordance with the site specific HASP, if contaminated materials have the potential to come in contact with the body. Serious physical hazards (cuts, lacerations, pinch points, etc.) are possible when operating equipment. It is imperative that proper and safe work practices are followed. The primary level of protection (LOP) shall be Level D protection, consisting of: a long sleeved shirt, long pants, hard hat, steel-toed work boots, safety glasses, and work gloves. Additional protection against potential chemical hazards shall be detailed in the site specific HASP

ATTACHMENT 5

DECONTAMINATION EQUIPMENT AND
PERSONNEL DECONTAMINATION PROCEDURES

DECONTAMINATION EQUIPMENT

- X Sheet Plastic (Visqueen)
- ___ Box Cutter
- X Caution Tape
- X Barricades
- X Cones
- X Duct Tape
- X Tubs (equipment drop station; wash station; rinse station)
- X Water
- X Decon Solution (TSP; Alconox)
- ___ Hudson Sprayer or equivalent
- ___ Water hose and nozzle
- X Scrub Brushes, long handle (wash station; rinse station)
- X Trash cans or drums
- ___ Plastic Liners
- ___ Bench, Stools, or Chairs
- ___ Soap
- X Drum; closed-top (for decon rinsate)
- ___ Hand pump, disposable
- X Rags
- X Towels
- X Buckets

LEVEL C PERSONNEL DECONTAMINATION

Station 1:	Equipment Drop	1.	Deposit equipment used on-site (tools, sampling devices and containers, monitoring instruments, radios, clipboards, etc.) on sheet plastic. Segregation at the drop reduces the probability of cross contamination. During hot weather operations, cool down station may be set up within this area.
Station 2:	Outer Garment, Boots, and Gloves Wash and Rinse	2.	Scrub outer boots, outer gloves and chemical-resistant splash suit with decon solution or detergent water. Rinse off using copious amounts of water.
Station 3:	Outer Boot and Glove Removal	3.	Remove outer boots and gloves. Deposit in container with plastic liner.
Station 4:	Respirator Cartridge or Mask Change	4.	If worker leaves Exclusion Zone to change respirator cartridge (or mask) this is the last step in the decontamination procedure. Worker's respirator cartridge is exchanged, new outer gloves and boot covers donned, joints taped, and worker returns to duty.
Station 5:	Boot, Gloves, and Outer Garment Removal	5	Remove boots, chemical-resistant splash suit, and outer gloves and deposit in separate container with plastic liner.
Station 6:	Respirator Facepiece	6.	Remove respirator facepiece. Avoid touching face with fingers. Deposit respirator facepiece on plastic sheet.
Station 7:	Field Wash	7.	Thoroughly wash hands and face. Shower as required. Remove inner gloves and deposit in container with plastic liner.

LEVEL B PERSONNEL DECONTAMINATION

Station 1:	Equipment Drop	1.	Deposit equipment used on-site (tools, sampling devices and containers, monitoring instruments, radios, clipboards, etc.) on sheet plastic. Segregation at the drop reduces the probability of cross contamination. During hot weather operations, cool down station may be set up within this area
Station 2:	Outer Garment, Boots, and Gloves; Wash and Rinse	2.	Scrub outer boots, outer gloves and chemical-resistant splash suit with decon solution or detergent water. Rinse off using copious amounts of water.
Station 3:	Outer Boot and Glove Removal	3.	Remove outer boots and gloves. Deposit in container with plastic liner.
Station 4:	SCBA Cylinder Change	4.	If worker leaves Exclusion Zone to change SCBA cylinder, this is the last step in the decontamination procedure. Worker's SCBA cylinder is exchanged, new outer gloves and boot covers donned, joints taped, and worker returns to duty.
Station 5:	Boot, Gloves, and Outer Garment Removal	5.	Remove boots, chemical-resistant splash suit, and outer gloves and deposit in container with plastic liner.
Station 6:	SCBA Removal	6.	Remove SCBA backpack and facepiece. Avoid touching face with fingers. Deposit SCBA on plastic sheet.
Station 7:	Field Wash	7.	Remove inner gloves and deposit in container with plastic liner. Thoroughly wash hands and face. Shower as required.

ATTACHMENT 6

DIRECT READING REPORT AND
INSTRUMENT CALIBRATION LOG

Pacific Edge Engineering, Inc.

DIRECT READING AIR MONITORING LOG

1) Project Name/Number: ______________________________ Date: __________

2) Weather: ______________ Wind Speed/Direction: ______________ Temp: __________

3) Calibration Log

Time	Location	Instrument	Compound	Concentration

4) **Comments:** ____

5) **Signature:** ______________________________ **Date:** __________

Pacific Edge Engineering, Inc.

INSTRUMENT CALIBRATION LOG

1) **Project Name/Number:** _____ **Date:** _____

2) **Weather:** _____ **Wind Speed/Direction:** _____ **Temp:** _____

3) **Calibration Log**

A **DATE:**

Instrument Type:	Model #:
Calibration Gas/Concentration:	Serial #:
Reading:	Calibrator Model #:
Adjusted Reading:	Calibrator
Comments	

B **DATE:**

Instrument Type:	Model #:
Calibration Gas/Concentration:	Serial #:
Reading:	Calibrator Model #:
Adjusted Reading:	Calibrator
Comments	

C **DATE:**

Instrument Type:	Model #:
Calibration Gas/Concentration:	Serial #:
Reading:	Calibrator Model #:
Adjusted Reading:	Calibrator
Comments	

D **DATE:**

Instrument Type:	Model #:
Calibration Gas/Concentration:	Serial #:
Reading:	Calibrator Model #:
Adjusted Reading:	Calibrator
Comments	

E **DATE:**

Instrument Type:	Model #:
Calibration Gas/Concentration:	Serial #:
Reading:	Calibrator Model #:
Adjusted Reading:	Calibrator
Comments	

ATTACHMENT 7

TAILGATE SAFETY MEETING FORM

TAILGATE SAFETY MEETING

DATE _____ TIME _____ PROJECT NO. _____

SITE LOCATION _____

_____

TYPE OF TRAINING

_____ Technical Transfer/H&S Meeting _____ Tailgate Safety Meeting

_____ HASP Reading/Review _____ Other: _____

_____

TRAINING PRESENTED BY: _____

TOPICS COVERED: _____

_____

_____

ATTENDEES

PRINT NAME	SIGNATURE

SITE SUPERVISOR: _____ DATE: _____